

CHAPTER 211 RULES for the DISPOSAL OF ANIMAL CARCASSES

RULES AND REGULATIONS RELATING TO DISEASE CONTROL OF DOMESTIC ANIMALS AND POULTRY

Maine Department of Agriculture, Food and Rural Resources
Division of Agricultural Resource Development

28 State House Station
Augusta, Maine 04333-0028
207-287-7608



Effective: April 28, 2012

TABLE OF CONTENTS

SECTION 1. GENERAL PROVISIONS	1
1. Summary	1
2. Legal Authority	1
3. Applicability of Rules	1
SECTION 2. DEFINITIONS	2
SECTION 3. VIOLATIONS	9
1. Unlawful Disposal	9
2. Enforcement	10
3. Penalties	10
4. Complaints	11
SECTION 4. CARCASS DISPOSAL/MANAGEMENT PLANS	11
1. Catastrophic Carcass Disposal/Management Plans Required	11
2. Catastrophic Carcass Disposal/Management Plans - Qualified Individual	11
3. Notice of Catastrophic Carcass Disposal/Management Plan Preparation Required	11
4. Required Elements of a Catastrophic Carcass Disposal/Management Plan	11
5. Catastrophic Carcass Disposal/Management Plans that Include Burial	12
6. Routine Carcass Disposal/Management Plans Required	12
SECTION 5. VARIANCES	12
SECTION 6. EXEMPTIONS	12
SECTION 7. ANIMAL CARCASS DISPOSAL CATEGORIES	13
1. Disposal of Animal Carcasses from Catastrophic Events	13
2. Routine Disposal of Animal Carcasses	16
3. Disposal of Carcasses of Animals Exhibiting Signs of Neurological Diseases	18
SECTION 8. SITING REQUIREMENTS FOR ANIMAL CARCASS BURIAL SITES	18
1. Setbacks and Separation Distances for Routine and Catastrophic Burial Sites	18
2. Setbacks and Separation Distances for Burial or Composting Less Than 500 Pounds per Year of Animal Carcasses or Offal, or One Large or Two Medium-Size Carcass(es) per Year Without a Qualified Professional to Evaluate the Site	18
3. Procedure for Burial of 500 Pounds or Less of Small Carcasses or Offal	19
4. Procedure for Burial of One Large (or Two Medium-Size) Carcass (es) per Year	19
5. Setbacks and Separation distances for Catastrophic Burial	20
SECTION 9. DESIGN REQUIREMENTS FOR ROUTINE AND EMERGENCY ANIMAL CARCASS BURIAL TRENCHES	20
1. Plan Development	20
2. Design Required	20
3. Surface Water	20
4. Engineering Techniques	20
5. Carcasses Limed	20
6. Cover Fill	20

7. Fill Extensions	20
8. Incidental Inclusions of Other Materials	20
9. Winter Storage	20
10. Inspection.....	21
11. Animal Carcass Thickness.....	21
12. Trench Width and Construction	21
13. Separation between Trenches	21
14. Shallow Trench Depth	21
15. Burial at Grade.....	21
16. Stabilization	21
SECTION 10. REQUIREMENTS FOR INCINERATION	22
1. Types of Incineration	22
2. General Requirements for Standard (In-vessel) Incinerators	22
3. Pyres	22
4. Air Curtain Burners	22
5. Gasification or Pyrolysis.....	23
SECTION 11. COMPOSTING REQUIREMENTS	23
1. General Composting Requirements	23
2. Routine Carcass Disposal Compost Methods.....	25
3. Catastrophic Carcass Disposal Compost Methods	25
4. Requirements for Composting Systems.....	26
5. Requirements for Catastrophic Composting Systems	34
SECTION 12. RENDERING OR PROCESSING PLANTS	35
1. Approved Rendering Facilities	35
2. Secure Containers for Storage	35
3. Length of Storage Time	35
4. Biosecurity Precautions Required.....	35
SECTION 13. REQUIREMENTS FOR OTHER DISPOSAL METHODS	35
1. Landfilling	35
2. Pre-processing Technologies	35
3. Technology Based (In-vessel Processing) Disposal Methods	36
4. Siting Requirements for Pre-processing Methods, Technology-Based Disposal Methods and Non-traditional Rendering	36
5. Operational Requirements for Pre-processing Methods, Technology-Based Disposal Methods and Non-traditional Rendering	37
SECTION 14. BIOSECURITY	37
1. Basic Biosecurity Measures.....	37
2. Routine Mortality.....	37
3. Catastrophic Events	37
4. Disease Outbreak.....	37
SECTION 15. TRANSPORTATION OF POULTRY AND LIVESTOCK CARCASSES.....	38
1. Secure Containers	38
2. Diseased Carcasses	38

SECTION 16. SETBACK AND SEPARATION TABLES	39
Table 1. Setbacks for Burial Trenches.....	39
Table 2. Minimum Separation Distance for Burial Trenches.....	39
Table 3. Setbacks for Composting or Burial of Less Than 500 Lbs. of Animal Carcasses or Offal per Year without a Qualified Professional.....	40
Table 4. Minimum Setback Distances for Carcass Compost Bins and Vessels	41
Table 5. Minimum Vertical Separation Distance between Compost and Soil Limiting Factors for Bins and Vessel Systems.....	41
Table 6. Minimum Setback Distances for Carcass Compost Piles, Windrows and Curing Piles	42
Table 7. Minimum Separation Distances for Uncontained Compost Sites	43
Table 8. Compost Site Filter Strip Requirements	44
BIBLIOGRAPHY	46
APPENDICES	49
Appendix A. Catastrophic Carcass Disposal Plan Template.....	49
Appendix B. Best Practical Treatment for Animal Carcass Incinerators	51
Appendix C. Catastrophic Animal Carcass Disposal Site Selection Protocol	54

RULES AND REGULATIONS RELATING TO DISEASE CONTROL OF DOMESTIC ANIMALS AND POULTRY

01 Department of Agriculture, Food and Rural Resources
001 Agriculture General: Division of Agricultural Resource Development
Chapter 211 –Rules for the Disposal of Animal Carcasses

SECTION 1. GENERAL PROVISIONS

1. Summary

This Rule supersedes Chapter 211 Disposal of Animal Carcasses (1996) of the Department of Agriculture, Food and Rural Resources Rules and Regulations. It expands the disposal rules to include siting and operating standards for current technologies for disposing of animal carcasses. It also adds an enforcement section that cites penalties for failure to comply with the rules.

2. Legal Authority

7 MRSA §1752; 7 MRSA §1706; and 17 MRSA §1818

3. Applicability of Rules

These Rules apply to the disposal of all domestic animal carcasses and body parts including but not limited to those resulting from normal operation of a commercial farm or as a result of a farming disaster such as fire, disease, suffocation, etc. Reportable disease requirements in Chapter 206, Prevention, Control and Eradication of Diseases of Domestic Animals and Poultry, must also be met. Animal carcasses mixed with potentially hazardous or toxic substances must meet the requirements of these rules and applicable Department of Environmental Protection (DEP) rules, the United States Department of Agriculture (USDA) rules and other applicable requirements.

For the purposes of these rules, non-native or exotic animals in captivity in zoos, animal parks, game shooting areas and farms shall be considered to be domestic and their disposal must be in accordance with these rules.

These rules do not apply to wildlife or marine mammals. Methods and standards outlined in these rules may be used as guidance when disposing of wildlife or marine mammals, where applicable.

SECTION 2. DEFINITIONS

1. **Agricultural Composting Operation** - Agricultural composting operation means composting that takes place on a farm. Agricultural composting operation does not include an operation that involves nonorganic municipal solid waste or that composts municipal sludge, septage, industrial solid waste or industrial sludge. Agricultural composting operation does not include an operation that composts materials with a moderate or high risk of contamination from heavy metals, volatile and semi-volatile organic compounds, polychlorinated biphenyls or dioxin.

2. **Agricultural Products** - Agricultural products means those plants and animals and their products that are useful to humans and includes, but is not limited to, forages and sod crops, grains and feed crops, dairy and dairy products, poultry and poultry products, bees and bees' products, livestock and livestock products and fruits, berries, vegetables, flowers, seeds, grasses and other similar products, or any other plant, animal or plant or animal products that supply humans with food, feed, fiber or fur. Agricultural products does not include trees grown and harvested for forest products.

3. **Air Curtain Incinerator** - A portable or stationary combustion device that directs a plane of high velocity, forced air through a manifold head into a pit with vertical walls in such a manner as to maintain a curtain of air over the surface of the pit and a re-circulating motion of the air under the curtain. An air curtain incinerator is considered open burning.

4. **Alkaline Hydrolysis** - A process by which carcasses are treated in a vessel using high temperatures and pressure in a strong solution of sodium or potassium hydroxide.

5. **Anaerobic** - Indicates lack of oxygen. A process that proceeds without oxygen.

6. **Anaerobic Digestion** - A process in which carcasses and other organic wastes are decomposed in a heated vessel in which there is no oxygen.

7. **Animal Baiting Site** - Locations at which offal, animal carcasses or other potential food sources are placed in order to attract wild animals. These are often used by coyote and bear hunters.

8. **Animal Carcass(es)** - Body(ies) or body parts of dead animals, including but not limited to pets, livestock and poultry. Carcasses may be mixed with manure and bedding or other organic materials which cannot be separated from the animal carcasses.

9. **Animals/ Carcasses, Large** - Animals such as cows and horses weighing 500 lbs or more.

10. **Animals/Carcasses, Mid-size** - Animals such as sheep, goats and deer weighing between 100 and 500 lbs.

11. **Animals/Carcasses, Small** - Animals which weigh 100 lbs. or less.
12. **Animal Unit** - One Animal Unit is the equivalent of 1000 lbs. of animal carcasses.
13. **BACT** - Best Available Control Technology - An approach to selecting air emission controls considering economic, environmental and energy impacts.
14. **Bar** - A measure of pressure. One bar is equivalent to about 14.5 lbs per square inch, or about one atmosphere.
15. **BMP - Best Management Practice** - Agricultural practices that have been identified by the Commissioner as 'best' based on a combination of factors including environmental impact, impact on animal or human health, practicality for implementation, effectiveness in the production system, and cost.
16. **BSE** - Bovine Spongiform Encephalopathy. A neurological disease of cattle. (See Transmissible Spongiform Encephalopathy (TSE))
17. **BPT** - Best Practical (or Practicable) Treatment - A treatment technology or method that achieves the greatest reduction in pollution at a reasonable cost.
18. **Burial** - A process by which animal carcasses are disposed of by placement within an excavation into the soil or upon the soil surface where they are then covered by soil material.
19. **Catastrophe (Catastrophic Event)** - An unexpected occurrence or set of circumstances such as a fire, disease outbreak, flood or other disaster resulting in multiple animal carcasses demanding immediate action.
20. **Commercial Composter (of carcasses or offal)** - A business that receives and composts animal carcasses or offal from other farms, businesses or individuals.
21. **Commissioner** - Shall mean the Commissioner of the Department of Agriculture, Food and Rural Resources or his/her designee.
22. **Compost Medium (pl Media)** - The relatively dry bulky organic material that forms the matrix within which carcasses or offal are composted.
23. **Composting** - Composting is the natural biological degradation of plant and animal matter in a controlled, well aerated system. When oxygen, moisture, nitrogen and carbon are available in the right proportions, the degradation generates considerable quantities of heat, reaching temperatures of 130° to 170° F. This sustained high temperature is responsible for the virtually complete destruction of pathogenic organisms and weed seeds in the composted material. The process also results in a humus-like product that has

its nutrients in a much more stable form than the uncomposted wastes making it safer and easier to store and use.

24. Composting, In-house - An emergency carcass disposal technique in which compost windrows are formed within the building(s) that housed the animals to be composted. This generally applies to poultry that are raised in open floor buildings on litter.

25. Composting, In-vessel - Compost systems that incorporate some type of vessel. Most of these systems use some form of active aeration to provide the needed oxygen. One system that has been used to compost poultry mortalities from an avian influenza outbreak utilized the large plastic 'bags' designed for feed storage with aeration tubes inside. Most of these systems are best suited to small carcasses or carcasses that have been ground or cut into pieces that can be managed by the system.

26. Composting, Precondition and Turn Method - A composting system that was developed specifically for disposal of animal carcasses and slaughterhouse wastes. In this method, the carcass or body parts are placed between layers of dry absorbent bedding or other compost media. The carcasses or body parts are then allowed to decompose without disturbance for a period of time, which varies with carcass size and other factors. Once this pre-conditioning period is done, the pile or windrow is then turned similar to the turned windrow system. This method may be used for both routine and emergency situations and for both large and small carcasses and slaughterhouse wastes (offal) of all types.

27. Composting, Static Pile - The static pile method of composting uses a pile of compostable material that is not agitated or turned. The initial mixing of the carcasses with the bulking agent must be sufficient to allow proper air flow and effective composting. Aerobic conditions are maintained by natural ventilation of the pile that is enhanced by using materials that maintain relatively high pile porosity. This approach applies primarily to poultry and other small carcasses.

28. Composting, Static Pile (Aerated) - In the aerated static pile method (also known as the Beltsville Method or Rutgers Method), the compost is not agitated or turned. The initial mixing of the carcasses with the bulking agent must be sufficient to allow proper air flow and effective composting. Aerobic conditions are maintained by mechanically drawing, or blowing air through the pile. This approach applies primarily to poultry and other small carcasses.

29. Composting, Turned Windrow - The turned windrow method is a compost system, in which the compost mixture is placed in rows and turned periodically during the compost cycle. The turning action supplies oxygen through gas exchange, thereby creating natural ventilation. This system only applies to small carcasses, small body parts or ground carcasses.

30. **Composting, University of Maryland Bin Composting System** - A composting system developed by the University of Maryland and the Delaware Cooperative Extension for disposing of the routine mortality from commercial broiler operations. This system utilizes covered bins and only applies to small or medium size carcasses or small body parts.
31. **Contained Facilities** - Structures built to house compost or curing piles that include impervious surfaces and are covered so as to exclude precipitation.
32. **Chronic Wasting Disease** - A neurological disease of members of the deer family. (See Transmissible Spongiform Encephalopathy (TSE))
33. **DEP** - The Maine Department of Environmental Protection.
34. **Department** - The Maine Department of Agriculture, Food and Rural Resources.
35. **District** - A Soil and Water Conservation District as established in 12 MRSA Sections 1-7.
36. **Emergency** - An emergency is a situation in which a catastrophe occurs resulting in large numbers of animal carcasses and there is no approved disposal plan or the approved disposal plan cannot be implemented.
37. **Farm** - Farm means the land, plants, animals, buildings, structures, ponds and machinery used in the production of agricultural products.
38. **Farm, Commercial** - A farm or farming operation that generates at least \$2,000 from agricultural products per year.
39. **Farm Operation** - Farm operation means a condition or activity that occurs on a farm in connection with the commercial production of agricultural products and includes, but is not limited to, operations giving rise to noise, odors, dust, insects and fumes; operation of machinery and irrigation pumps; disposal of manure; agricultural support services; and the employment and use of labor.
40. **Fermentation (Lactic Acid or Acid)** - A process in which ground tissue and a fermentable carbohydrate is mixed with an inoculant (usually *Lactobacillus acidophilus*) and allowed to ferment under anaerobic conditions at a temperature near 35°C (95°F).
41. **Flood Plain** - The lowland and relatively flat areas adjoining inland and coastal waters, including flood prone areas of offshore islands, which are periodically inundated by flood water.
42. **Gasification** - A combustion process conducted in a low oxygen environment. Gasification is conducted in an enclosed device using controlled flame combustion used

to burn (combust) animal carcasses or offal, reducing them to ash. Hot gases are recirculated in the process, increasing internal temperatures and reducing particulate matter emissions.

43. **Handle (Handling)** - To store, transfer, collect, separate, transport, salvage, process, reduce, recover, incinerate, treat or dispose of.

44. **Incineration** - The destruction of animal carcass soft tissue and most of the hard tissue by means of controlled combustion.

45. **Incinerator, Standard (In-vessel)** - An enclosed device using controlled flame combustion to burn (combust) animal carcasses or offal, reducing them to ash.

46. **Intermittent Stream** - A stream or portion of a stream that flows for part of the year. Intermittent streams do not show up as a blue line on United States Geological Service (USGS) 7.5 or 15 minute topographic maps. They do not include man-made ditches, except where a ditch is dug as a diversion to an intermittent stream.

47. **Landfill** - A discrete area of land or an excavation used for the disposal of solid waste.

48. **Limiting Factor (Soil)** - Seasonal high groundwater table, sand or gravel layers or bedrock.

49. **MRSA or MRS** - The Maine Revised Statutes Annotated or Maine Revised Statutes. Maine laws organized by title number, chapter and section.

50. **Neurological Disease Symptoms** - Neurological diseases are disorders of the brain, spinal cord and nerves. Symptoms of neurological diseases often include: behavioral changes such as aggression or nervousness; abnormal posture; lack of coordination; inability or difficulty in rising or walking; decreased milk production; and/or weight loss with normal appetite.

51. **Normal Mortality** - Mortality which occurs routinely and is not the result of disease epidemic, inoculation, experimental treatment or farming disaster such as fire or suffocation. While exact normal mortality numbers are not known, normal mortality is something planned for and can be expected.

52. **Nutrient Management Plan (NMP)** - A plan developed in accordance with 7 MRS Chapter 747, which identifies all sources of plant nutrients generated or utilized on a farm and specifies appropriate application rates, setbacks from sensitive features and application methods.

53. **Offal** - Unwanted or unused body parts remaining from butchering or slaughtering animals.

54. **Owner (see Responsible Party)** - Any person who owns, operates or occupies a farm or other regulated facility where animals reside. This definition also includes individuals who own animals.

55. **Pathogen** - An organism, chiefly a microorganism, including: viruses, bacteria, fungi, helminth ova, and all forms of animal parasites and protozoa capable of producing an infection or disease in a susceptible host.

56. **Person** - Any individual, partnership, association, firm, company, corporation, department, agency, group, including a city, town, county, state, federal or other governmental unit, or any other entity responsible for an activity subject to these rules.

57. **Perennial Waterbody** - A waterbody which shows up as a blue line on a 7.5 or 15 minute USGS topographic map. The term waterbody includes, but is not limited to, natural and artificial lakes, ponds, brooks, rivers, streams, bogs, swamps, marshes and tidal marshes.

58. **Plasma Arc Gasification** - The conversion of matter to a plasma. Plasma is a gas that has been ionized by passing it through the electrical arc of a plasma torch. Plasma torches operate at temperatures from 1500° C to over 7000°C. Extremely hot plasma arc torches have been used to gasify (or vitrify) solid wastes. The result is gases and a rock-like or glass-like residue.

59. **Poultry** - All domesticated birds which are bred for the primary purpose of producing eggs, meat, down or feathers.

60. **Prion** - A naturally occurring protein in nervous tissue that can be converted into a disease-causing form. Such agents propagate by transmitting a mis-folded protein state that induces a change in existing polypeptides in the host organism. Mis-folded prions are thought to be the causative agent for all known TSEs (See Transmissible Spongiform Encephalopathy).

61. **Public Water System** - Any publicly or privately-owned system of pipes, structures and facilities through which water is obtained for or sold, furnished or distributed for human consumption; provided that such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year or bottles water for sale.

62. **Pyre** - A stack of combustible material used to burn a carcass. These are generally constructed in the open air with layers of wood, straw, hay, coal or other combustible material meant to achieve temperatures high enough to completely reduce the carcasses to ash.

63. **Pyrolysis** - See gasification.

64. **Qualified Individual** - A person who demonstrates to the Commissioner that he/she has sufficient training and/or expertise to develop an animal carcass disposal plan.

65. **Qualified Professional** - Individuals who have the training and experience necessary to evaluate, select and design modifications for animal carcass disposal sites. This includes but is not limited to licensed soil scientists, NRCS field staff, SWCD soil technicians, engineers and others approved by the Commissioner.

66. **Regulated Activity or Facility** - An activity or facility that handles, manages, processes, transports or disposes of domestic animal carcasses or offal.

67. **Rendering or Processing Facility** - Any structure, machine, device or system, or combination thereof, designed and operated for the purpose of making an animal feed or feed supplement from animal carcasses or parts.

68. **Responsible Party** - Any person who alone or in conjunction with others is responsible for the animal carcasses.

69. **Routine Mortality** - See Normal Mortality.

70. **Sand and Gravel Deposit** - A surficial geological deposit such as an esker, outwash plain, glaciomarine delta, kame, stratified moraine or other stratified deposits commonly consisting of sand and/or gravel.

71. **Secure Container** - A container that is watertight and has a cover that will prevent access by mammals or birds. A container that will prevent any bodies, body parts (including feathers) or fluids from leaking, falling, spilling or blowing out of the container.

72. **Secure Landfill** - A landfill that utilizes a liner system, a leachate collection and treatment system and a final cover system to minimize discharges of waste or leachate and to control the release of gas to the environment.

73. **Scrapie** - A neurological disease of sheep and goats. (See Transmissible Spongiform Encephalopathy (TSE))

74. **Significant Sand and Gravel Aquifer** - A porous formation of ice-contact and glacial outwash sand and gravel that contains significant recoverable quantities of water (greater than ten (10) gallons per minute from a properly installed well).

NOTE: Some of the State's significant sand and gravel aquifers are mapped by the Maine Geological Survey.

75. Soil Textural Classes - Names given to soil units or masses, referring to the relative proportions of sand, silt and clay that they contain based on USDA and Natural Resources Conservation Service (NRCS) classification. Examples are: loam, clay, sandy loam, etc.

76. Thermal Depolymerization (TDP) - Thermal depolymerization is a process for the reduction of complex organic materials (often waste products) into light crude oil by superheating them in the presence of water.

77. Thermal Hydrolysis - A process in which ground carcasses or other organic material are heated to 180°C using saturated steam for 40 minutes or more while under high pressure (10 bar or higher). Early research into this technology suggests that prions may be deactivated in this process.

78. Transmissible Spongiform Encephalopathy (TSE) - One of several similar neurologic diseases thought to be caused by a mis-folded protein (prion) in the nervous tissue which results in slow degeneration of the nervous system and ultimately in death. These diseases include Scrapie, 'Mad Cow Disease' and Chronic Wasting Disease.

79. Vector - Any animal, bird, insect or person capable of transferring disease organisms through contact with a carcass or associated materials.

80. Vitrify - Turn into a glass-like substance.

81. Wetland - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

SECTION 3. VIOLATIONS

1. Unlawful Disposal

It is unlawful to dispose of domestic animal carcasses and slaughterhouse wastes (offal) except in accordance with these rules.

A. Clean up Required - The Commissioner may require the responsible party to clean up any carcass or offal disposal site that is not established in accordance with these rules. The Commissioner may also arrange to have an unlawful disposal site cleaned up.

B. Timeline for cleanup - The Commissioner may establish a timeline for clean up of an unlawful carcass disposal site, including penalties as provided in 7 MRS § 1706 for failure to meet the timeline.

C. Standards for cleanup - The Commissioner may establish standards or criteria for an acceptable cleanup on a case by case basis.

D. Animal baiting sites - Coyote or other animal (except bear) baiting sites using domestic animal carcasses or offal as bait shall be established according to 12 MRS §11227 and shall meet the following requirements:

(1). Domestic animal carcasses and/or offal placed as bait shall meet the same minimum setback and separation distance requirements as carcass burial sites.

(2). No more than 500 lbs of offal or the equivalent of one large domestic animal carcass may be at a bait site at any one time. For the purposes of this requirement, an area within 100 feet of a bait pile of carcasses or offal is considered to be part of the same bait site.

(3). A bait site may be re-used as long as the remains of previous bait piles have been cleaned up prior to adding more carcasses or offal.

2. Enforcement

Failure to comply with these rules may result in enforcement actions taken by the Commissioner. These actions may include but not be limited to:

A. Notification to the violator of loss of ‘Right to Farm’ protection under Chapter 10 of the Department’s rules.

B. Seeking penalties as specified in Section 3.3.

C. Referral to the Attorney General for enforcement in court.

D. Referral to the Maine Department of Environmental Protection in cases where water quality or other DEP laws may have been violated.

E. Referral to other state, local or federal agencies where relevant laws or regulations may have been violated.

3. Penalties

The following penalties may be assessed for violations of these rules. The penalty to be applied shall depend on its applicability to the specific situation.

Animal Health Law Penalty section (7 MRS §1706) Penalty - A person who violates this section commits a civil violation for which a fine of not more than \$500 per day for each violation may be adjudged, except that the total of the fines may not exceed \$50,000 (Applies to anyone who violates the animal disease control laws or rules, including these rules).

Maine Agriculture Protection Act Penalty section (7 MRS§158) Failure to Adopt Best Management Practices - Failure to apply best management practices in accordance with this chapter constitutes a separate civil violation for which a fine of up to \$1,000, together with an additional fine of up to \$250 per day for every day that the violation continues, may be adjudged (Applies to a commercial farm, commercial farm operation or agricultural composting operation).

4. Complaints

Where applicable, complaint investigations associated with activities covered under these rules may be conducted using the protocols set out in 01-001 Chapter 10 *Rules for the Agricultural Compliance Program*.

SECTION 4. CARCASS DISPOSAL/MANAGEMENT PLANS

1. Catastrophic Carcass Disposal/Management Plans Required

Farms with 300 animal units or more shall have a written catastrophic carcass disposal/management plan that has been developed or approved by a certified Nutrient Management Planning Specialist.

2. Catastrophic Carcass Disposal/Management Plans Developed by Qualified Individual

Catastrophic carcass disposal management plans shall be developed by a qualified individual in accordance with these rules. Training in a recognized carcass disposal training program may be accepted as a means to becoming a qualified individual.

3. Notice of Catastrophic Carcass Disposal/Management Plan Preparation Required

A certified Nutrient Management Planning Specialist shall provide a written notice to the Department when a catastrophic carcass disposal/management plan has been developed. The notice shall include the planner's name and contact information as well as the farm name, owner/operator name, farm location, contact information and number of animal units for which the plan was prepared.

4. Required Elements of a Catastrophic Carcass Disposal/Management Plan (See plan template in Appendix A)

A carcass disposal/management plan shall, at a minimum, contain:

- A. the farm or business name;
- B. the owner/operator's name;
- C. mailing address, and phone number(s);
- D. farm location - physical road address;
- E. type of farm;
- F. number, type and size of animals included in the plan;
- G. disposal/management method to be used;

- H. alternative method to be used if first choice cannot be used;
- I. map or site sketch showing location(s) if a land-based disposal option is being used (Inclusion of GPS coordinates are highly recommended);
- J. results of soil evaluations on the disposal/management sites;
- K. details of disposal/management process to be used including sketches where appropriate;
- L. sources of materials, equipment and services to be used for the disposal/management option;
- M. name and contact information for the farm's veterinarian; and
- N. a list of emergency numbers that can be called (e.g., Maine Department of Agriculture, law enforcement agencies, local government, utilities such as a power or gas company).

5. Catastrophic Carcass Disposal/Management Plans That Include Burial

Emergency carcass disposal plans that include burial shall be in accordance with Section 8 and Section 9 of these rules.

6. Routine Carcass Disposal/Management Plans Required

All nutrient management plans written or updated after the date of the adoption of this rule shall contain a section describing the routine carcass disposal/management plan for the farm or farm operation developed in accordance with these rules.

SECTION 5. VARIANCES

Due to site and/or soil limitations, domestic animal owners may find that they cannot comply with all the provisions of these rules, especially when proposing to bury or compost animal carcasses. In recognition of that fact, variances to these rules may be approved by the Commissioner provided that animal and human health and ground and surface waters are protected, that no reasonable alternative exists, and that proper engineering techniques are utilized to offset reduced setbacks and/or limitations. Requests for variances to these rules must be submitted in writing to the Commissioner for his/her approval along with provisions for overcoming limitations except as noted below. Variances will be reviewed and acted upon on a site-specific basis. The Commissioner may approve, deny or approve with conditions. Activities occurring under the variance must comply with the conditions of the variance.

Exception: In an emergency, the request for a variance may be made verbally to the Commissioner. In these time sensitive situations, the Commissioner may verbally approve, deny, or approve with conditions. After the emergency has been resolved, a written carcass disposal plan and site sketch shall be provided to the Commissioner.

SECTION 6. EXEMPTIONS

1. Noncommercial pet owners burying or composting their own small animal pets (for example: dogs, cats, birds or fish) on their own land are exempt from these rules.

2. Farm operations or other regulated facilities or individuals, disposing of 500 lbs. per year or less of animal carcasses or offal, by burial or composting, are exempt from the requirements in Section 7.2.E(3) and shall meet the requirements in Sections 8.2 and 8.3 for procedures for small volumes.

3. Individuals disposing of no more than one large (or two medium size) animal(s) per year are exempt from Sections 7.2.E (3) and shall meet the requirements in Sections 8.2 and 8.4.

SECTION 7. ANIMAL CARCASS DISPOSAL CATEGORIES

Animal carcasses, which require disposal, fall into one of the following two categories: Catastrophic and Routine.

1. Disposal of Animal Carcasses from Catastrophic Events

A. Notification Required

In the event of a catastrophic occurrence requiring carcass disposal, the owner must notify the Department.

B. Final Authority for Catastrophic Disposal Plan

In all catastrophic carcass disposal cases, the authorization to implement the carcass disposal plan shall rest with the Commissioner.

C. Procedure

Upon notification of a catastrophe, the Commissioner may take the following steps:

- (1). Visit the site and determine whether or not there is a need for carcass disposal;
- (2). Authorize the implementation of the carcass disposal plan for the farm or other regulated facility;
- (3). Develop the disposal plan if no approved plan exists or if the previously approved plan cannot be implemented, or an alternate approach is more appropriate;
- (4). Keep a record on file of the disposal plan used and any authorized amendments;
- (5). Ensure compliance with the carcass disposal plan or authorized procedure; and
- (6). Undertake any other steps necessary to ensure proper disposal of the carcasses occurs.

D. Acceptable Methods for Catastrophic Animal Carcass Disposal

The owner shall, with the Commissioner's prior approval, use one of the following methods of disposal:

- (1). Rendering facilities;
- (2). Burial;
- (3). Incineration;
- (4). Composting;
- (5). In-house Composting;
- (6). Landfilling (Transport to an approved landfill);
- (7). Alkaline hydrolysis; or
- (8). Other methods approved by the Commissioner

E. Methods for Disposal of Carcasses Suspected to Contain TSEs.

Disposal of carcasses suspected to contain TSEs will be determined on a case by case basis by the Commissioner. Methods known to destroy TSEs include alkaline hydrolysis and high temperature (greater than 1650° C) incineration. Other methods may be approved by the Commissioner based on evidence of effectiveness (NOTE: Other technologies that have promise are thermal hydrolysis, novel pyrolysis (ETL Energy Beam) and plasma arc technology).

F. Catastrophic Disposal of Small Flocks of Poultry

As an alternative to the procedures in these rules, disposal of a small flock of poultry (fewer than 500 birds) may be done by following the procedures outlined in the University of Maine publication: "Safe Disposal of Backyard Poultry Mortalities" 2006. The responsible party having a flock suspected to have a highly contagious disease such as HP Avian Influenza shall report the disposal to the Commissioner.

G. Site Evaluation for Catastrophic Carcass Disposal - All methods of disposal require a site evaluation (setbacks, availability of power, access, etc.). Some methods also require soils evaluation.

- (1). Disposal Methods Requiring Soil Evaluation - Methods in which contact between carcasses and associated materials with the soil will require a soil evaluation. These methods include, but are not limited to, composting, incineration using a trench type air curtain burner, and burial.
- (2). Soil Evaluation. Sites where a soil evaluation is required must be evaluated by an NRCS employee, a State of Maine Certified Soil Scientist, or other qualified professional in accordance with this and other appropriate sections of this rule.

(3). Disposal Methods not Requiring Soil Evaluation - Plans for disposal methods not requiring soil evaluation shall be developed by qualified individuals with training and/or experience in the particular disposal methods. These methods include, but are not limited to, in-house composting, anaerobic digestion, alkaline hydrolysis, incineration using standard incinerators, acid fermentation, and other methods that are completely enclosed so that there is no contact with the soil or water.

(4). Requirements for Plans for Other Methods Shall be Determined on a Case by Case Basis by the Commissioner.

H. Records of Catastrophic Carcass Disposal Operation

(1). Records Required

The responsible party shall be responsible for maintaining a record of all catastrophic carcass disposal operations. Copies of catastrophic carcass disposal records kept by responsible parties must be provided to the Department.

(2). Minimum Content of Records Required

At a minimum, catastrophic carcass disposal records shall include the following information:

- (a). Name of party responsible for the carcasses;
- (b). Location (shown on a topographic map, aerial photo or Maine Atlas) of the property where the activity occurred;
- (c). Disposal site location (shown on a map or aerial photo of the property). This shall include the GPS coordinates of the disposal site;
- (d). Type of animal carcass or animal product disposed of;
- (e). Quantity of each animal, product or other material disposed of;
- (f). Method of carcass disposal; and
- (g). Cause of mortality.

(3). Length of Time Records of Catastrophic Carcass Disposal Must be Maintained:

- (a). Burial - A Record of a burial site shall be maintained by the farm or regulated facility for at least 10 years.
- (b). Other Land-Based Methods of Disposal - Records of other land-based disposal of carcasses such as composting and air curtain incineration shall be maintained by the farm or regulated facility for a minimum of 3 years.

(c). Non-land Based Disposal Technologies - Records of non land-based disposal of carcasses such as anaerobic digestion or alkaline hydrolysis shall be maintained by the farm or regulated facility for a minimum of 1 year after the resulting product has been disposed of.

(4). For Carcass Disposal by Burial, Composting, or Incineration Using a Trench Air Curtain Burner, the Following Site-Specific Data, Shall be Included:

- (a). Soils information, if required;
- (b). Engineering techniques employed, if any;
- (c). Scaled or dimensioned site plan showing property lines, buildings, slopes, north arrow, waterbodies, disposal plan details and construction details (including carcass thickness for burial) and any other information which is pertinent to the project;
- (d). Profile or cross section of the disposal site (burial only);
- (e). Erosion control measures;
- (f). Date catastrophic event occurred;
- (g). Inspection and maintenance schedule and records for the site; and
- (h). Person or organization responsible for preparing the plan.

I. Carcass/Debris Separation Required

As much as is reasonably possible, carcasses shall be separated from inorganic debris such as metal or roofing. If reasonable separation is not possible, disposal shall be determined on a case by case basis by the Commissioner in consultation with the Maine Department of Environmental Protection.

J. Storage of Carcasses from Catastrophic Events

Carcasses may be stored only long enough to arrange proper disposal. If ambient air temperatures are above freezing and storage must be for more than 24 hours the responsible party shall seek guidance from the Commissioner on issues such as leachate and vector control. Vector control measures must be put in place to prevent access by vectors to the carcasses.

2. Routine Disposal of Animal Carcasses

A. **Applicability** - This section applies to both farm and non-farm domestic animal carcass disposal.

B. Routine Disposal - Disposal shall be considered routine when it is a result of normal mortality.

C. Disposal Methods - Acceptable disposal methods for carcasses resulting from normal mortality when carried out according to provisions of this rule are:

- (1). Rendering or processing facilities;
- (2). Burial;
- (3). Incineration;
- (4). Gasification/pyrolysis;
- (5). Composting;
- (6). Anaerobic digestion;
- (7). Thermal hydrolysis; or
- (8). Other methods approved by the Commissioner.

D. Daily Disposal for Poultry

Carcasses resulting from normal mortality of a commercial poultry operation shall be disposed of on a daily basis or placed in a secure container that will prevent leakage or access by insects, rodents, birds and other animals until properly disposed.

E. Site Evaluation and Plan Development for Routine Disposal

(1). Disposal Methods Requiring Soil Evaluation (Burial, Composting, Open Incineration or Air Curtain Burners) - An NRCS or State of Maine Certified Soil Scientist or other qualified professional shall evaluate soil suitability in accordance with applicable sections of this rule. Plans shall be developed by an NRCS or State of Maine Certified Soil Scientist, a registered professional engineer, a certified geologist, a qualified Soil and Water Conservation District employee or other qualified individual, in accordance with these rules.

(2). Disposal Methods not Requiring Soil Evaluation (Rendering, In-vessel Incineration, Alkaline Hydrolysis, Anaerobic Digestion, Pyrolysis) - Disposal methods not requiring soil evaluation shall be developed by qualified individuals with training and/or experience in the particular disposal methods.

(3). Small Volumes - Burial or composting of less than 500 lbs. of animal carcasses or offal per year, or one large or two medium size animals per year, are exempt from the requirements of Section 7.2.E(1) and shall be done in accordance with Section 8.2.

3. Disposal of Carcasses of Animals Exhibiting Signs of Neurological Diseases

- A. Animals that die or are euthanized as a result of a suspected neurological disease such as rabies or Transmissible Spongiform Encephalopathy (TSE) shall be reported to the state veterinarian prior to disposal.
- B. The carcasses of animals suspected to have had a neurological disease shall be tested for the presence of TSEs at the owner's expense. Results of such test shall be provided to the state veterinarian as soon as the results are known.
- C. The state veterinarian shall prescribe the appropriate storage and disposal requirements for animals displaying signs of a neurological disease on a case by case basis.

SECTION 8. SITING REQUIREMENTS FOR ANIMAL CARCASS BURIAL SITES

1. Setbacks and Separation Distances for Routine and Catastrophic Burial Sites

- A. Burial trenches shall have minimum setback distances set forth in Table 1.
- B. Animal carcasses shall be separated above bedrock, water tables and the upper limits of sand or gravel horizons in accordance with Table 2.
- C. Farm operations and other regulated facilities, which are exempt from provisions of Section 7.2. E(1), may use the procedures in Section 8.2.
- D. If no site can be found to meet all the setbacks in Table 1, the operator may seek a variance from the Commissioner for site specific setbacks. Site specific setbacks shall be developed by a qualified professional and must include provisions to protect sensitive features.

2. Setbacks and Separation Distances for Burial or Composting Less Than 500 Lbs per Year of Animal Carcasses or Offal, or One Large or Two Medium Size Carcass(es) Per Year, Without a Qualified Professional to Evaluate the Site

Burial or composting sites for less than 500 lbs. of small carcasses or offal, or for one large or two medium size animal(s) per year, may be selected without the assistance of a qualified professional provided the following requirements are met:

- A. The site must be in an upland position without a large watershed. Compost sites must have a seasonal high water table and bedrock at least 18 inches below the ground surface. Burial sites must have depth to the seasonal high water table and bedrock to accommodate burial according to Section 8.3 or Section 8.4.

B. Burial and compost sites must meet the minimum setback distances set out in Table 3, unless a variance is granted by the Commissioner.

3. Procedure for Burial of 500 Lbs. or Less of Small Carcasses or Offal.

A. A trench which is three feet or less wide and no more than 18 inches deep shall be excavated. The bottom of the trench must be at least 24 inches above bedrock and must be above the seasonal high water table. Trenches must follow the contour so that the bottom of the trench is level.

B. For sites with shallow seasonal water table or bedrock, the carcasses or offal may be placed on the soil surface or on fill to achieve the minimum separation distances as an alternative to digging a trench.

C. Carcasses or offal must be placed in the trench or on the surface to a thickness of no more than 12 inches, or one carcass if the carcass is more than 12 inches thick. The carcass(es) or offal shall be limed, and covered with a minimum of 18 inches of soil or 24 inches of compost. The fill surface shall be vegetated or otherwise stabilized to prevent erosion.

D. Burial shall not be done in or on wetland soils unless approved by the Commissioner.

E. Additional trenches may be used if separated by a minimum of three feet, edge of trench to edge of trench.

4. Procedure for Burial of One Large (or Two Medium Size) Carcass(es) Per Year

A. A trench which is 24 inches deep and wide enough to accommodate the carcass shall be excavated. The bottom of the trench shall be above the seasonal high water table and at least 24 inches above bedrock. The bottom of the trench should be level.

B. For sites with a shallow seasonal water table or bedrock, the carcass(es) may be placed on the soil surface or on fill to achieve the minimum separation distances as an alternative to digging a trench.

C. Carcasses shall be placed in the trench or on the surface, limed, and covered with a minimum of 18 inches of soil or 24 inches of compost. The fill surface shall be vegetated or otherwise stabilized.

D. Burial shall not be done in or on wetland soils unless approved by the Commissioner.

5. Setbacks and Separation Distances for Catastrophic Burial

In case of a catastrophic event, the setbacks and separation distances for a burial site shall be in accordance with an approved catastrophic disposal plan. In the event that there is no approved plan or the plan cannot be implemented, the setbacks and separation distances shall be determined by the Commissioner on a case by case basis.

SECTION 9. DESIGN REQUIREMENTS FOR ROUTINE AND CATASTROPHIC ANIMAL CARCASS BURIAL TRENCHES

1. Plan Development - Plans shall be developed by an NRCS or State of Maine Certified Soil Scientist, an engineer, a geologist, a qualified Soil and Water Conservation District employee or other qualified individual in accordance with these rules, except as provided in Section 6.

2. Design Required - All burial trenches must be designed and built in accordance with criteria established by these rules.

3. Surface Water - Surface water shall be diverted away from trenches by the use of berms, diversion ditches or other suitable methods.

4. Engineering Techniques - Appropriate engineering techniques shall be used to overcome site-specific limitations, including, but not limited to, adding fill, installing curtain drains or diversion ditches and using clay liners.

5. Carcasses Limed - Carcasses shall be limed if burial takes place during the summer months (June 1 to September 30 of each year) to prevent offensive odors.

6. Cover Fill - Cover fill depth shall be a minimum of 18 inches and shall be of sandy loam or loamy sand texture. A 24 inch layer of compost may be used in place of soil as fill.

7. Fill Extensions - When fill is applied to a site to meet minimum separation distances, the fill materials shall grade to existing ground surface at no steeper than 3:1 or 33 percent slope.

8. Incidental Inclusions of Other Materials - Provisions shall be made to separate carcasses from other materials except that minor amounts of inorganic debris, or small quantities of manure, bedding and feed are acceptable for burial with carcasses.

9. Winter Storage - Provisions shall be made for winter storage or alternative disposal if burial is the main disposal method.

10. Inspection - Burial trenches shall be periodically inspected to assure that the site is secure. Any evidence of breakouts shall be immediately addressed by liming and re-covering with soil.

11. Animal Carcass Thickness - Animal carcasses shall be piled no thicker than two feet (2') or the thickness of one large animal, except as follows:

A. Farm operations and other regulated facilities which dispose of 500 lbs. or less of animal carcasses by burial, and which do not utilize the services of a professional for site selection or design, shall pile carcasses no thicker than 12 inches or the thickness of one carcass.

B. Variances may be granted for carcass thickness by the Commissioner when site selection and plan design is provided by a qualified professional. Whenever a variance is granted, the separation distance listed in Table 2 shall be increased by 6 inches for each 12 inch increase in thickness of carcasses.

12. Trench Width and Construction - Burial trenches shall be a maximum of 12 feet wide and shall be constructed along the contour so as to be level.

13. Separation Between Trenches - A burial trench shall be separated from other burial trenches by a minimum distance equal to the trench width or to the toe of the fill for adjoining trenches, whichever is greater. If two trenches are of different widths, the separation distance shall be greater or equal to the wider of the two.

14. Shallow Trench Depth - Excavations for trenches should be kept as shallow as is practicable to facilitate carcass decomposition and utilization of nutrients by soil micro-organisms and plants.

15. Burial at Grade - In order to avoid disturbing the soil structure or to maintain separation from the water table or bedrock, carcasses may be placed on the soil surface and covered with a minimum of eighteen inches of soil or two feet of compost. Place fill or compost on the soil surface to the finished grade height and width of the fill extensions and then excavate trenches into the fill material. Finished grade fill extensions shall be 3:1 or 33%. Trench widths shall be a maximum of 12 feet. Burial mounds shall be stabilized similar to trenches to prevent erosion and sedimentation.

16. Stabilization - Cover material over burial trenches shall be vegetated, covered with bark mulch or erosion control mulch, or otherwise stabilized to prevent erosion.

SECTION 10. REQUIREMENTS FOR INCINERATION

1. Types of Incineration

Incineration is the complete destruction of the carcass tissue by burning so that only the mineral content (ash) remains. Methods for achieving this tissue destruction include:

- A. Standard (In-vessel) Incinerators;
- B. Pyres;
- C. Air Curtain Incinerators;
- D. Gasification or Pyrolysis Units; and
- E. Plasma Arc Gasification.

Standard incinerators, air curtain incinerators, gasification or pyrolysis units and plasma arc gasification are all subject to DEP air licensing regulations – 06-096 CMR 115, and DEP Solid Waste Management Rules 06-096 Chapter 400.

2. General Requirements for Standard (In-vessel) Incinerators

In order to receive a DEP license, the applicant must control emissions from each unit to a level considered by the DEP to represent Best Practical Treatment (BPT), as defined in 06-096 CMR 100 (See Appendix B for a description of Best Practical Treatment as defined by DEP).

3. Pyres. Pyres are permitted for use only in extreme emergencies and must have prior approval from the Commissioner. Siting and operational standards shall be determined on a case by case basis by the Commissioner. Note: The Department will notify the DEP Air Bureau prior to utilizing pyres to dispose of carcasses.

4. Air Curtain Incinerators. Air curtain incinerators may be used for a catastrophic disposal situation provided the following operational and siting standards are met:

A. Siting Standards for Air Curtain Incinerators - Siting shall be determined by the Commissioner on a case by case basis.

B. Operational Standards for Air Curtain Incinerators

- (1). Best management practices shall be used at all times when operating an air curtain incinerator
- (2). A trained operator shall be on-site at all times when the incinerator is operating.

Note: The Department will notify the DEP Air Bureau prior to utilizing air curtain incinerators to dispose of carcasses.

5. Gasification or Pyrolysis. Gasification or pyrolysis units may be used for either routine or catastrophic disposal situations. The licensing and operational standards that apply to standard incinerators (see Sections 10.1 and 10.2 above) also apply to gasification and pyrolysis.

SECTION 11. COMPOSTING REQUIREMENTS

Composting may be used as both a routine disposal method and as a catastrophic disposal method for animal carcasses and slaughterhouse waste (offal).

1. General Composting Requirements

A. Compost Media for Animal Carcass Composting

The media used for composting carcasses shall provide the conditions that will support hot aerobic composting. The composter should refer to *Best Management Practices for Animal Carcass Composting 2011*, Maine Department of Agriculture, Food, and Rural Resources, for guidance in selecting an appropriate compost medium.

B. Site Evaluation and Selection

Routine mortality compost sites shall be selected on the basis of the standards in Tables 3 through 7 located at the end of these rules. If site modifications or changes to setbacks are needed, this shall be done with the advice of a qualified professional (see definitions). Catastrophic compost sites shall be evaluated for suitability by a qualified professional on a case by case basis (see Appendix C for guidance in doing this).

C. Stormwater and Leachate Control

For all compost methods that may generate leachate or runoff, the surface upon which the compost materials will be placed shall have a slope that is no greater than 6% or less than 1.5%. The preferred slope is between 2% and 4% to allow rainfall to run off from the pad rather than collect on it. A vegetated buffer strip shall be maintained down slope from the pad to act as a filter for any water that leaves the pad. (See Table 8). Vehicle traffic shall be minimized in the vegetated buffer strip to reduce compaction of the soil. Additional storm water controls may be required on a case by case basis. Stormwater control measures shall be designed by the Natural Resources Conservation Service (NRCS), a private engineer, a certified soil scientist or other qualified professional.

D. Testing Requirements

Compost Products From a Disease Outbreak - Compost made from carcasses that resulted from a disease outbreak (such as foot and mouth disease or avian influenza) shall be tested for the survival of the specific disease agent involved.

E. Odor and Vector Attraction

Animal carcass compost sites shall be managed to minimize odors and the attraction of insects and other vectors. All carcasses or offal shall be covered with an appropriate compost medium as soon as possible. In no case shall carcasses remain uncovered for more than 24 hours when temperatures are 40° F or above. Offal shall be covered within 4 hours of delivery to the site.

F. Records

In addition to the records required for catastrophic disposal in Section 7.1.H, the following records shall be kept for catastrophic carcass compost operations:

- (1). Location and date the piles were built;
- (2). Temperatures. Temperature records shall be maintained if the compost product is to be distributed to the public; and a
- (3). Record of disposition of compost - There shall be a record of the final disposition of each batch of compost produced.

These records shall be maintained for one year after the compost product has been distributed.

G. Failure to Reach Temperature Requirements

Compost that fails to meet the method-specific time and temperature requirements must be re-composted or spread on the producer's own fields or forest land.

H. Disposition of Product

- (1). Compost produced from routine mortalities and offal may be distributed for general use by the public if it has met the time/temperature standards established for the specific compost system being used. The farm or regulated facility must retain records showing that the time/temperature standard was met. Compost may be spread on the regulated facility's own fields even if no temperature records are kept or do not indicate that the time/temperature standard has been met.

(2). The disposition of compost made from carcasses that result from a catastrophic event shall be determined on a case by case basis by the Commissioner.

(3). Compost produced from routine mortalities or offal shall be utilized or removed from the regulated facility's site within two years of its production.

2. Routine Carcass Disposal Compost Methods

Several methods are suitable for routine carcass or offal composting. These include:

- A. University of Maryland Bin System (for poultry, small animals and poultry offal);
- B. In-vessel compost systems (for poultry, small animals and animal parts);
- C. Pre-condition and turn system (for any type of carcass or offal);
- D. Turned windrow (for small carcasses or animal parts);
- E. Aerated static pile system (may be used for poultry and small carcasses but limited usefulness due to the heterogeneous nature of the mix);
- F. Static pile system (may be used for poultry and small carcasses but limited usefulness due to the heterogeneous nature of the mix); and
- G. Other methods approved by the Commissioner.

3. Catastrophic Carcass Disposal Compost Methods

Methods that may be used for catastrophic carcass disposal include:

- A. Turned windrow method (for offal, animal parts, poultry and small carcasses only);
- B. Pre-condition and turn method (for any type of carcass or offal);
- C. In-house windrow composting method (for certain poultry and small carcasses);
- D. In-vessel compost systems;
- E. Static or aerated static pile systems; and

F. Other methods approved by the Commissioner.

4. Requirements for Composting Systems

A. Siting Requirements for Compost Systems

Compost systems shall be sited so as to minimize negative health, environmental, and nuisance impacts. Standards for siting different types of compost systems vary depending on type and level of potential impacts. The standards for several common compost systems follow. Siting standards for other types of compost systems shall be determined by the Commissioner on a case by case basis.

Farms or other regulated facilities that have an existing carcass compost site that fails to meet the siting requirements at the time of the adoption of these rules shall contact the Department for assistance in evaluating the site and may seek a variance from the Commissioner.

(1). General Siting Requirements

(a). Significant sand and gravel aquifer sites shall not be used for uncontained composting operations;

(b). If the separation distances listed in the appropriate table do not exist naturally, engineering techniques such as loam liners, curtain drains, diversion ditches or adding fill may be used to establish these separation distances;

(c). Marshes, bogs, swamps and other areas with saturated soils shall not be used for composting sites;

(d). Composting sites shall be located as close to the source of carcasses as practical and in accordance with setback requirements in the appropriate tables. Whenever possible, the site should also be located so that the prevailing winds will not carry odors from the site to nearby neighbors;

(e). Surface water shall be diverted away from the compost facility;

(f). Compost sites shall be accessible to equipment at all times. If composting is to be done on natural soils, alternative sites or methods may need to be used during times when the soil is too wet to support traffic;

(g). Compost sites shall be designed and built so that no standing water will accumulate around or near the bins, vessels, piles or

windrows. Leachate shall be directed to a suitable area to contain and/or treat the leachate; and

(h). Farm operations, individuals or other regulated facilities, who dispose of less than 500 lbs. of animal carcasses or offal per year, or one large animal or two medium size animals per year, by composting, are exempt from requirements (a) and (f) above. Section 8.2 contains special site selection requirements for small volumes.

(2). Siting Requirements for Maryland Bin Composting

(a). Setbacks and Separation Distances

Compost bins shall be set back minimum distances set forth in Table 4. In addition, animal carcasses shall be separated above bedrock, water tables and sand or gravel horizons in accordance with Table 5.

(b). Slope

The surface around the bins shall have a minimum slope of 1.5 percent and a maximum slope of 6 percent sloping away from the bins in all directions.

(3). Siting Requirements for Uncontained Carcass Compost Systems (turned windrow, pre-condition and turn, static pile and aerated static pile systems)

(a). Setbacks and Separation Distances

If the compost site is to be selected by the farmer or someone other than a qualified professional, the site shall meet the minimum distances set forth in Table 6. These setbacks may be modified by a qualified professional as long as adequate provisions or modifications are made to protect sensitive features. In addition, animal carcasses shall be separated above bedrock, water tables and sand or gravel horizons in accordance with Table 7.

(b). Slope

The composting surface shall have a minimum slope of 1.5 percent and a maximum slope of 6 percent. A slope between 2 and 4 percent is preferred.

(4). Siting Requirements for In-house Composting

(a). Setbacks and Separation Distances

Since the composting is done within the barn housing the poultry or livestock itself, no setbacks to sensitive features are required. In addition, since the compost piles or windrows will be inside a building, no separation distances from the water table, bedrock or sand and gravel layers are required.

(b). General Requirements

(i) In order to be suitable for in-house composting, the building must be a set up so that most of the floor can be accessed to build windrows.

(ii) Buildings to be used for in-house composting must be set up so that equipment necessary to manage the compost process may be operated in the building and may access all windrows to manage them.

(5). Siting Requirements for In-vessel (forage bag) Composting

This section applies to composting done inside the long tube-like plastic bags used to store forage. Requirements for other types of in-vessel compost systems shall be established by the Commissioner on a case by case basis.

(a). Setbacks and Separation Distances

The compost site shall meet the minimum distances set forth in Table 4. These setbacks may be modified by a qualified professional as long as adequate provisions or modifications are made to protect sensitive features. In addition, the containers holding animal carcasses shall be separated above bedrock, water tables, and sand or gravel horizons in accordance with Table 5. Separation distances may be modified by a qualified professional with permission of the Commissioner.

(b). Slope and Lay Out

The composting surface shall have a minimum slope of 1.5 percent and a maximum slope of 6 percent. A slope between 2 and 4 percent is preferred. A large open area with a relatively uniform slope is required to lay out the forage bags. The site should allow

the forage bags to be placed so that they run up and down the slope and not trap water.

B. Operational Requirements for Compost Systems

(1) Operational Requirements for the University of Maryland Bin System

The University of Maryland Bin Composting System uses wooden or concrete block bins to compost poultry, poultry offal or other small carcasses. The composting is done in two active stages plus a curing stage. Carcasses shall be layered with straw and manure or other appropriate compost medium until the bin is full (see Section 11.1.A). The bin contents shall be allowed to compost for 7-10 days and then moved to a second bin. The moving shall be done so as to mix and loosen the material as much as possible.

After the material has been in the second bin for a minimum of 10 days, the material shall be moved to a curing pile where it shall be held for a minimum of 30 days. The moving shall be done so as to mix and loosen the material as much as possible.

(a). Bin Construction - The compost bins shall be built of decay-resistant wood or other durable materials. They shall be built on an impervious base and shall have a roof to keep out excess moisture

(b). Management of Maryland Bin Composters - The University of Maryland bin system shall be managed as follows:

(i). Temperature shall be monitored and recorded on a daily basis at least until the time/temperature standard has been met. Temperature readings shall be taken at a point near the center of the bin. The compost shall attain a minimum temperature of 131° F (55° C) for a minimum of one day in Stage I and for a minimum of three days in Stage II. Batches that fail to meet this temperature requirement shall be incorporated into subsequent batches and re-composted or be spread on the owner's land;

(ii). At the end of each day that carcasses are placed in the bin, they shall be covered with manure and bulking agent to reduce odor, fly and vector problems;

(iii). To avoid fly and odor problems, carcasses shall be placed at least 6" from all sides of the compost bins;

(iv). Bin contents shall be moved or turned at least twice during the first 17 to 20 days of composting to assure thorough mixing and complete decomposition. After each turning, care shall be taken to make sure there is no soft tissue on the surface. Any soft tissue on the surface shall be covered immediately with manure, hay, compost or other appropriate cover material; and

(v). Composting shall be done using ingredients that promote hot aerobic composting (See Section 11.1.A).

(2). General Operational Requirements for Systems Using Piles or Windrows (Note: The composter should refer to *Best Management Practices for Animal Carcass Composting 2011*, Maine Department of Agriculture, Food, and Rural Resources, for guidance in pile or windrow construction and management).

(a). Carcasses or offal shall be mixed with manure, bedding materials or other appropriate compost medium and formed into windrows or piles as soon as possible to minimize odor, insect and vector problems (See Section 11.1.A). Carcasses or offal shall make up no more than 20% of the mix by volume.

(b). The mixture shall have sufficient porosity such that it will easily allow air to be pushed or drawn through the pile or windrow (This is generally the case if the bulk density of the material is less than 1000 lbs per cubic yard).

(c). Preparation of carcasses: Large carcasses may be vented by puncturing or opening the abdomen, or may be cut into smaller pieces to facilitate the compost process. In the case of carcasses with highly contagious diseases, such as Foot and Mouth Disease, the Commissioner shall determine if carcasses are to be vented or cut on a case by case basis.

(d). Carcass or offal compost piles or windrows shall be visually checked on a daily basis during the first week after construction. Any exposed carcasses or tissues shall be covered with at least two feet of an appropriate compost material.

(e). Compost piles and windrows shall be constructed to be between four feet (4') and seven feet (7') in height and no more than fifteen feet (15') in width in order to allow for adequate aeration.

(f). Monitoring shall consist of daily checks on temperature and assessment of pile moisture. The thermometer used to check pile temperature shall have at least a three foot (3') probe and a scale that includes the range from 32°F to 212°F (0° to 100° C).

(3). Operational Requirements for the Turned Windrow System

The minimum operational requirements for a turned windrow system are as follows:

(a). In the windrow composting method, temperature shall reach a minimum of 131° F (55° C) for at least 15 days during the composting period. During the high temperature period there must be a minimum of five (5) turnings of the pile. Once this temperature requirement is met, the windrow shall be turned at least once per week. Once the temperature in the windrow drops below 110°F and does not increase after turning, the windrow may be placed in a curing pile;

Temperature monitoring shall be conducted in the following manner:

(i) A set of two temperature readings shall be taken at equally spaced intervals for every 30' of windrow length, but in no case shall there be less than two sets of readings taken for each windrow. One set of readings at each location shall consist of:

- a reading at the three foot depth or core of the pile; and
- a reading at one foot below the surface.

(ii) Temperature readings shall be taken in the same locations each day. An arithmetic average for each windrow may be calculated for each day's readings.

(b). There shall be at least 15 days that the average temperature at either the one foot or three foot depth for the day is 131° F (55° C) or greater.

(4). Operational Requirements for the Static Pile System and the Aerated Static Pile System

The static pile and aerated static pile systems are essentially the same except that the aerated static piles are formed over perforated pipes or

ducts that allow air to be introduced with a blower. The minimum operational requirements for the static pile and aerated static pile systems are as follows:

(a). The pile shall be maintained at a temperature of 131° F (55° C) or greater for at least three (3) days at both the three foot and one foot depths in the pile. Detention time in the static pile or aerated static pile shall be at least 21 days, after which the pile may be dismantled and moved to curing;

(b). Temperature monitoring shall be conducted in the following manner:
A set of two temperature readings shall be taken, at equally spaced intervals, for every 30' of pile length, but in no case shall there be less than two sets of readings taken for each pile. The readings shall be taken from both of the following locations:

- Three feet or core of the pile; and
- One foot below the surface.

(c). Temperature readings shall be taken in the same locations each day. There shall be at least three (3) days at each depth and location that the temperature for the day is 131° F (55°C) or greater.

(5). General Operational Requirements for the Pre-condition and Turn Method

(a). Temperature shall be monitored on a daily basis and recorded, if the compost is to be distributed to the public. Temperatures shall be taken at the one foot and three foot depths in the pile. A set of two temperature readings shall be taken at equally spaced intervals for every 30' of windrow length, but in no case shall there be less than two sets of readings taken for each windrow. One set of readings at each location shall consist of:

- a reading at the three foot depth or core of the pile; and
- a reading at one foot below the surface.

Temperatures must be taken at the same locations each day. The compost shall attain a minimum temperature of 131° F (55° C) at the three foot depth at each location for a minimum of three days in the pre-condition stage (Stage I) or for a minimum of fifteen days at either depth during the turning stage (Stage II). The windrow shall be turned at least five times. Batches that fail to meet this temperature requirement shall be incorporated into subsequent batches and re-composted or spread on the farm or regulated facility's own land.

(b). Carcasses and/or offal shall be layered with an appropriate compost medium and formed into windrows or piles as soon as possible to minimize odor, fly and vector problems (See Section 11.1.A).

(c). For all types of carcasses and offal, a layer of 18 to 24 inches of an appropriate compost medium shall be laid out on the composting surface as a base. Carcasses and/or offal shall be placed on this base in one or more layers depending on carcass or offal size. In all cases there shall be a minimum of two feet between the carcass and/or offal and the outside of the pile or windrow.

(d). Once all the carcasses or offal have been added to the pile, a minimum of two feet of the compost medium shall be placed over the carcasses or offal. No part of the carcass or offal may be less than two feet from the outside of the pile.

(e). Pre-condition and turn compost piles or windrows shall be constructed to be between four feet (4') and seven feet (7') in height depending on size and number of carcasses and no more than fifteen feet (15') in width in order to allow for adequate aeration.

(f) The pre-conditioning period length shall be sufficient to allow most of the soft tissue to be decomposed prior to the first turning of the windrow. The length of the pre-conditioning period will vary by size and type of carcass or offal. See *Best Management Practices for Animal Carcass Composting 2011* Maine Department of Agriculture, Food, and Rural Resources for guidance in determining the appropriate pre-condition period length.

(6). Operational Requirements for In-house Composting

In-house composting may be done using any of the following methods: turned windrow; pre-condition and turn; static pile; or aerated static pile. The operational requirements shall be the same as the requirements laid out in the sections addressing these methods.

(7). Operational Requirements for In-vessel Composting

Because in-vessel systems vary widely, operational requirements shall be determined on a case by case basis. All systems shall meet the following minimum operational requirements:

- (a). Carcasses or offal mixed with manure, bedding or other appropriate compost medium shall be placed in the vessel as soon as possible to minimize odor, fly and vector problems (See Section 11.1.A). Carcasses shall make up no more than 20% of the mix by volume;
- (b). Provisions shall be made to treat odors in the exhaust air leaving the vessel;
- (c). The contents of the vessel shall be maintained at a temperature of 131° F (55° C) or greater for at least three (3) days throughout the vessel. The composting mixture shall remain in the vessel until all soft tissue is gone but in no case shall it be retained for less than 21 days, after which the contents may be removed to a compost pile or placed in curing;
- (d). Monitoring shall consist of daily checks on temperature, assessment of moisture, and visual checks on the vessel and associated equipment. The thermometers used to check vessel temperature will vary based on vessel configuration but shall have the capability of measuring temperatures in the range from 32° to 212° F (0° to 100° C); and
- (e). A set of temperature readings shall be taken at equally spaced intervals, depending on vessel configuration, sufficient to give a reasonably accurate representation of the temperature throughout the vessel.

5. Requirements for Catastrophic Composting Systems

A. Methods - Acceptable methods include turned windrow, static pile, aerated static pile, pre-condition and turn, in-house windrows and in-vessel. The preferred method for most situations is pre-condition and turn, especially for disease outbreaks. Authorization by the Commissioner is required before implementing a catastrophic carcass disposal composting process.

B. Siting Requirements - Although the standards used for siting routine compost operations may be used in an emergency, considerations may preclude the use of those standards, especially in the case of a highly contagious disease. For catastrophic events, the protocol outlined in Appendix C is recommended on a case by case basis.

C. Operational Requirements - Operational requirements for composting of catastrophic losses are the same as those for routine mortalities except that:

- (1). The disposition of batches that fail to meet the time/temperature standards shall be determined by the Commissioner on a case by case basis;
- (2). The compost medium shall be hot material prior to building compost piles if at all possible. Hot sludge based compost is recommended if available;
- (3). Compost that results from diseased carcasses shall be tested for the survival of the disease organism prior to being used or distributed; and
- (4). In addition to the items needed for routine compost records, the records of a catastrophic disposal compost operation shall also comply with Section 7.1.H. Records of Catastrophic Carcass Disposal Operation.

SECTION 12. RENDERING OR PROCESSING PLANTS

- 1. Approved Rendering Facilities** - Animal carcasses may be rendered at state or federally approved rendering plants. In addition to traditional rendering methods, this may include non-traditional rendering methods such as fluidized bed drying, flash dehydration and extrusion.
- 2. Secure Containers for Storage** - Carcasses to be sent to a rendering or processing plant shall be kept in secure containers that will minimize access by insects, rodents and other animals and minimize the escape of odors and leachate.
- 3. Length of Storage Time** - Carcasses shall not be stored at the farm or regulated facility for more than 72 hours before going to a rendering or processing plant when the ambient air temperature is above 40° F.
- 4. Biosecurity Precautions Required** - Precautions must be taken to prevent the spread of disease from the rendering trucks, storage areas and/or personnel to healthy poultry and livestock.

SECTION 13. REQUIREMENTS FOR OTHER DISPOSAL METHODS

- 1. Landfilling** - Carcasses may be disposed of in a properly engineered landfill that has been licensed or permitted by Maine DEP or its equivalent if not in Maine. Approval of the land fill owner is required before utilizing this method.
- 2. Pre-processing Technologies** -

A. Carcasses may be pre-processed in order to make them suitable for certain disposal or processing technologies. These may include but are not limited to:

Freezing;
Grinding;
Steam Sterilization;
Acid Fermentation (stabilize material for rendering); or
Thermal Hydrolysis (prior to anaerobic digestion).

B. The Commissioner must approve the pre-processing of any carcasses from animals that died or were slaughtered due to a disease outbreak.

3. Technology-Based (In-vessel Processing) Disposal Methods (grinding followed by chemical, physical or biological breakdown of tissues)

A. Carcasses may be processed using technology-based methods meant to decompose the tissues into stable by-products. These may include but are not limited to:

Anaerobic digestion;
Acid fermentation;
Thermal hydrolysis;
Alkaline hydrolysis; or
Thermal depolymerization.

B. The Commissioner must approve the processing of any carcasses from animals that died or were slaughtered due to a disease outbreak.

4. Siting Requirements for Pre-processing Methods, Technology-Based Disposal Methods and Non-traditional Rendering

A. **Siting Requirements for Permanent Facilities.** Permanent facilities within buildings shall be sited to comply with all local, state and federal regulations. Where possible, the setbacks in Table 4 should be met.

B. **Evaluation of Suitability for Traffic.** Plans for permanent facilities shall evaluate the suitability of roads and driveways to handle the expected truck traffic at all times of the year.

C. **Air Emission Standards.** Permanent facilities shall comply with air emission standards as determined by DEP where applicable.

D. **Siting for Mobile Units.** Mobile units or fixed facilities not enclosed in a building shall be located as close to the source of the carcasses as is practical, while meeting the setback requirements in Table 4, and the separation distances in

Table 5. A qualified professional may modify these setbacks or separation distances with the permission of the Commissioner.

5. Operational Requirements for Pre-processing Methods, Technology-Based Disposal Methods and Non-traditional Rendering

All operations utilizing pre-processing, technology-based disposal methods or non-traditional rendering shall:

- Have and implement a plan for the disposal or use of the final product;
- Comply with best management practices for that technology;
- Have skilled operators with proper training to operate the facility;
- Operate so as to meet any air emission standards established by DEP; and
- Meet any other requirements as determined by the Commissioner.

SECTION 14. BIOSECURITY

1. Basic Biosecurity Measures - All persons responsible for the disposal of animal carcasses shall adhere to standard biosecurity measures when addressing carcass disposal. These include such measures as boot cleaning, changing clothing, and hand washing prior to coming into contact with live animals after contact with carcasses. This includes using disinfectants that cite this use on the label and are currently registered with the USEPA and the Maine Board of Pesticides Control.

2. Routine Mortality - When composting, the operator shall practice good pile construction and maintenance. The operator shall construct compost piles so as to discourage disease vectors (scavengers) from disturbing the pile. Piles or windrows shall be maintained so that any carcass or offal that may be exposed is covered promptly. Equipment used for handling the raw inputs shall be cleaned before handling feed or finished compost products.

3. Catastrophic Events - In the event that a large number of carcasses must be managed quickly due to a large-scale disaster, and equipment must be brought onto the farm, biosecurity protocols shall be established to minimize the amount of traffic on and off the farm to ensure proper disinfection procedures are used, and to limit exposure of livestock to off-farm traffic.

4. Disease Outbreak - In the case of a disease outbreak, the farm operation shall contact the appropriate state and federal animal health authorities for direction on implementing biosecurity measures.

SECTION 15. TRANSPORTATION OF POULTRY AND LIVESTOCK CARCASSES

1. Secure Containers - Poultry or livestock carcasses transported over any public road shall be transported in secure containers.

2. Diseased Carcasses - Carcasses from animals that died or were slaughtered due to a disease outbreak may only be transported from the farm or other regulated facility where they originated with the permission of the Commissioner. A written biosecurity plan shall be required prior to transportation of diseased carcasses.

SECTION 16. SETBACK AND SEPARATION TABLES

TABLE 1. Setbacks for Burial Trenches

FEATURE	SETBACK IF FEATURE IS:	
	UPSLOPE	DOWNSLOPE
Perennial Waterbodies @	100'	150'
Intermittent Waterbodies @	50'	75'
Public Water System	300'#	300'#
Private Wells (except owners)	150'+	150'+
Private Wells (owner)	100'+	100'+
Public Roads	50'	50'
Residences (except owner)	100'+	100'+
Non Residences (except owner)	50'+	50'+
Buildings (owner)	20'	20'
Property Lines	50'+	50'+
Wetlands of Special Significance	100'	100'
Other Wetlands	Not Within	Not Within
Significant Sand & Gravel Aquifers	Not within	Not within
10-Year Flood Plain	Not within	Not within
Slopes	15% or less	15% or less
Distance Between Burial Trenches	a distance equal to or greater than the width of the trench	

@ Setbacks shall be from the normal maximum high water mark.

+ This setback may be reduced with written permission from property owner.

This setback may not be reduced.

TABLE 2. Minimum Separation Distance for Burial Trenches

Seasonal Water Table	12"*+
Bedrock	24"*+
Upper Limits of Sand or Gravel Horizons	12"*+

*Based upon carcass thickness of up to 24 inches; for each additional 12 inches thickness of carcasses above 24 inches, increase separation by 6 inches.

+These separation distances may be achieved by the use of engineering techniques such as placing fill, installing curtain drains or diversion ditches.

TABLE 3. Setbacks for Composting or Burial of Less Than 500 Lbs. of Animal Carcasses or Offal Per Year, or One Large or Two Medium Size Carcasses per Year, without a Qualified Professional

FEATURE	SETBACK
Perennial Waterbodies @	100'
Intermittent Waterbodies @	50'
Public Water System	300'#
Private Wells (except owners)	150'+
Private Wells (owner)	100'+
Public Roads	50'
Residences (except owner)	100'+
Non Residences (except owner)	50'+
Buildings (owner)	20'
Property Lines	50'+
Wetlands of Special Significance	100'
Other Wetlands	Not Within
Significant Sand & Gravel Aquifers	Not within
10-Year Flood Plain	Not within
Slopes	15% or less
Distance Between Burial Trenches	a distance equal to or greater than the width of the trench

@ Setbacks shall be from the normal maximum high water mark.

+ This setback may be reduced with written permission from property owner

This setback may not be reduced.

TABLE 4. Minimum Setback Distances for Carcass Compost Bins and Vessels

Feature	<u>Setback</u>
Perennial Waterbodies @	100'
Intermittent Waterbodies @	50'
Public Water Supplies	100' #
Private Wells (except owner)	100'
Roads	50'
Buildings (except owner)	
Residences	100'+
Non-residences	50'+
Buildings (owner)	20'
Property Lines	50'
Significant Sand and Gravel Aquifers	N.A.
Flood Plain	Not within 100 year
Wetland	Outside (Unless permits obtained)
Slopes	15% or less (Unless otherwise modified)

@ Setbacks shall be from the normal maximum high water mark.

+ This setback may be reduced with written permission of adjacent property owner.

! If the barn is located closer to the residence or other building than this setback, the compost sites may be developed next to the barn but shall not be closer to the residence or other building than the nearest point of the barn.

This setback may not be reduced.

TABLE 5. Minimum Vertical Separation Distance Between Compost and Soil Limiting Factors for Bins and Vessel Systems

FEATURE	Bins, Vessels & Contained Curing Piles	Uncontained Curing Piles
Seasonal Water Table	12"*	18"*
Bedrock	12"*	24"*
Upper Limits of Sand or Gravel Horizons	12"*	18"*

* Separation distance may be achieved by adding fill or lowering the water table.

TABLE 6. Minimum Setback Distances for Carcass Compost Piles, Windrows, and Curing Piles[&]

FEATURE	SETBACK IF FEATURE IS:			
	Facility has > 700 AUs or is a Commercial Composter		Facility has < 700 AUs or is a non-Commercial Composter	
	UPSLOPE	DOWNSLOPE	UPSLOPE	DOWNSLOPE
Perennial Waterbodies @	100'	300'	100'	150'
Intermittent Waterbodies @	100'	200'*	50'	75'*
Public Water System	300' #	300' #	300' #	300' #
Private Wells (except owners)	150'+	300'+	150'+	150'+
Private Wells (owner)	100'+	200'+*	100'+	100'+*
Public Roads	100'	200'*	50'	50'*
Residences (except owner)	300'+	300'+	100'+	100'+
Non Residences (except owner)	150'+	150'+*	50'+	50'+*
Buildings (owner)	20'	20'*	20'	20'*
Property Lines	100'+	200'+*	50'+	50'+*
Wetlands of Special Significance	100'	200'*	100'	100'*
Other Wetlands	Not Within	Not Within	Not Within	Not Within
Significant Sand & Gravel Aquifers	Not Within	Not Within	Not within	Not within
10-Year Flood Plain	Not Within	Not Within	Not within	Not within
Slopes	15% or less	15% or less	15% or less	15% or less
Greater than 33% slope	25'	150'	25'	100'

& Most setbacks may be adjusted with permission of the Commissioner based on site specific conditions and management techniques except where otherwise noted.

@Setbacks shall be from the normal maximum high water mark.

*Must also meet the filter strip requirements (see Table 8), the greater of which prevails.

+This setback may be reduced with written permission from property owner.

This setback may not be reduced.

TABLE 7. Minimum Separation Distances for Uncontained Compost Sites

	<u>Paved</u>	<u>Unpaved</u>
	(Depth below working surface in inches)	
Seasonal water Table	12	24
Bedrock	12	24
Upper Limits of sand/gravel Horizons	12	18

These separation distances may be achieved by the use of engineering techniques such as placing fill, installing curtain drains or diversion ditches.

TABLE 8. Compost Site Filter Strip Requirements*

	Facilities with < 700 AUs or Non-Commercial Composters	Facilities with > 700 AUs or Commercial Composters	COMMENT
Filter strip width parallel to the contour down slope from compost pad	<u>For pads less than 25 feet in width:</u> minimum width of 25 feet along the downslope side of the compost pad <u>For pads > 25 feet but less than 200 ft^{&}:</u> Minimum of 1 ft filter width for each 1 ft of impervious pad width up to 50 feet. Then 1 ft of filter strip width for each 2 feet of impervious pad width between 50 and 200 ft.		*** Note: Pads must also meet the setback requirements in Table 6, which may be greater than the filter strip width.
Filter strip length perpendicular to the contour	Equal to or greater than the length of the compost pad parallel to the contour	Equal to or greater than the length of the compost pad parallel to the contour	***
Minimum Depth to hardpan or water table+	10 inches	15 inches	
Minimum Depth to bedrock+	18 inches	24 inches	
Vegetative cover Maintenance**	<u>Herbaceous vegetation (grass):</u> mow 1 or 2 times/yr ; <u>forest cover:</u> maintain forest stand and organic duff layer		
Run off flow through filter strip	Grade or use stone or erosion and sediment control mulch berm to direct flow as sheet flow at upslope edge of filter strip. For herbaceous filter strips more than 100 ft in width include a mulch or stone berm every 50' to redistribute flow into sheet flow.		*** Maintain as sheet flow, repair any concentrated flow channels.
Depth to Sand or Gravel Layers+	6"	12"	
Erosion and Sediment Control	Disturbed soils shall be stabilized. No traffic shall be allowed in filter strip until vegetation has been well established.		
Filter strip slope	≤ 10% slope++;		

* Requirements are for new facilities. For existing facilities or new facilities on existing farming operations that only use farm generated materials, reductions to these standards may be authorized by the Commissioner.

** Vehicle traffic shall be minimized within the filter strip to minimize compaction of the soil, rutting, and damage to the vegetation.

*** May be adjusted with permission of the Commissioner based on site specific conditions and management techniques

& Pads greater than 200 ft in width shall require a filter strip designed on a site specific basis by a qualified professional.

+ May be achieved by engineering techniques such as diversion ditches, curtain drains or adding fill. Permits may be required for altering wetlands to comply with filter strip requirements.

++ For sites > 10% but less than 20% slope: Site specific modifications may be allowed with permission of the Commissioner.

Bibliography

Seekins, Bill. 2007. Best Management Practices for Large Animal Carcass Composting. Maine Department of Agriculture, Food, and Rural Resources.

Seekins, Bill. 2011. Best Management Practices for Animal Carcass Composting. Maine Department of Agriculture, Food, and Rural Resources.

South NTC Bulletin No. 5210-0-05. South National Technical Center. USDA. Soil Conservation Service. Fort Worth, Texas. February, 1990.

South NTC Bulletin No. 5210-0-10. South National Technical Center. USDA. Soil Conservation Service. Fort Worth, Texas. June, 1990.

Maine Department of Environmental Protection. Maine Solid Waste Management Rules. Chapter 410. Composting Facilities. Adopted February 18, 2009.

Maine Department of Agriculture. Guidelines for Siting Compost Operations. November 21, 2005

Cooperative Extension Service. Composting Poultry Carcasses. MP 317. University of Arkansas.

Maryland Cooperative Extension Service. Maryland Freestanding 2-Stage Composter; Isometric Poultry Composting Shed. 1988.1.

Brodie, H. and L. Carr. Composting Animal Mortalities on the Farm. Fact Sheet 717. University of Maryland Cooperative Extension.

Rynk, R (Editor) 1992. On-Farm Composting Handbook. NRAES-54. Northeast Regional Agricultural Engineering Service.

Dougherty, M (editor) 1999. Field Guide to On-Farm Composting. NRAES-114. Natural Resource, Agriculture and Engineering Service.

Natural Rendering: Composting Livestock Mortality and Butcher Waste. Cornell Waste Management Institute. Department of Crop & Soil Sciences Rice Hall • Ithaca, NY 14853.

Carcass Disposal: A comprehensive Review. National Agricultural Biosecurity Center, Kansas State University. 2004.

University of Maine Cooperative Extension. Safe Disposal of Backyard Poultry Mortalities. 2006.

Maryland Cooperative Extension. Fact Sheet 801: Guidelines for In-house Composting of Catastrophic Poultry Mortality. 2002.

Bowman, G.L., and W. P. Shulaw. 2001. Biosecurity Fundamentals for Extension Personnel. Extension Fact Sheet VME. The Ohio State University.

Bowman, G.L., and W. P. Shulaw. 2001. Disinfection in On-Farm Biosecurity Procedures. Extension Fact Sheet VME. The Ohio State University.

Best Management Practices for the Prevention of Entry of Disease onto Livestock Operations. 2001. New York State Cattle Health Assurance Program.

Ellis, R. 2001. Best Management Practices for Farm Visitors. New York State Cattle Health Assurance Program

Flory, Gary A.; Bendfeldt, E.S. ; Peer, R.W.; Zirkle, C.; Malone, G.W. 2006. Guidelines for In-House Composting Poultry Mortality as a Rapid Response to Avian Influenza. Virginia Department of Environmental Quality and University of Delaware.

Tablante, Nathaniel L.; Carr, L.E.; Malone, G.W.; Patterson, P.H.; Hegngi, F.N.; Felton, G.; Zimmerman, N. Guidelines for In-House Composting of Catastrophic poultry Mortality. Maryland Cooperative Extension. Fact Sheet 801.

Hawkins, Ben; Fraser, H.; Groot-Nibbelink, B.; Joynes, K.; Taylor, T.; Wand, C.; Bradshaw, S.; Fleming, C. Best Management Practices: Deadstock Disposal. Ontario Ministry of Agriculture, Food and Rural Affairs.

Somerville, Robert; Fernie, K.; Smith, A.; Andrews, R.; Schmidt, E.; Taylor, D. 2009. Inactivation of Infectious Prion Agents (TSEs) Utilizing a Thermal Hydrolysis Process. University of Edinburgh, Scotland.

Council for Agricultural Science and Technology (CAST). 2008. Poultry Carcass Disposal Options for Routine and Catastrophic Mortality. Issue Paper 40. CAST, Ames, Iowa.

Air Burners, LLC. 2007. Technical Memorandum: Principle of Operation of Air Curtain Burning. Air Burners, LLC. Palm City, FL.

Air Burners, LLC. 2007. Technical Memorandum: Avian Influenza Bird Carcass Disposal. Air Burners, LLC. Palm City, FL.

Shapiro, Alan. 2002. The Use of Air Curtain Destructors for Fuel Reduction. Fire Management Tech Tips. USDA Forest Service Technology and Development Program.

APPENDIX A

Catastrophic Carcass Disposal Plan Template

Farm Name _____

Primary Disposal Option _____ (composting, burial ?)

Secondary Disposal Option _____ (composting, burial, landfill?)

The site for our catastrophic carcass compost/burial site is in tract ____, field ____, on land we own. The site was chosen with the guidance of _____ (licensed soil scientist, NRCS field staff, SWCD technician...)(Include name and phone number of person providing technical assistance.) Here we have enough space to compost/bury up to _____ cows.

For equipment to do this we own or have access to the following:

___ Bucket Loader(s)

___ Compost Turner(s)

___ 3 foot temperature probe

___ 3 to 6 foot piece of sharpened rebar

___ trucks with dump body

___ excavators

___ bulldozers

___ backhoes

___ skid steers

___ pulp loaders

___ feed mix wagons

___ manure spreaders

___ Plastic safety fencing to contain the area (___ ft.) and fastened to the ground around the finished compost area to discourage predators.

Cover materials for the composting process will include mixes of the following materials:

chopped straw, ground corn stalks, silage, ground hay, wood shavings/sawdust, cow manure, calf and heifer bedding, horse bedding and poultry litter. (see BMP for best ratios)

If we need more than we have on hand, we will get _____ (horse bedding, sludge compost, other bulking materials) from _____. (Include contact name and phone number for material.)

For Composting, we will need $6X + 6$ cubic yards of cover material. (X = number of cows.) . In addition, we will need $1.75X + 1.75$ cubic yards of material to build the base. In total, for a 10 cow windrow, we would need approximately 85 cubic yards of material. If our entire herd required composting, we would need _____ cubic yards of compost material.

In order to create the bed, we would need to lay down an 18 inch deep bed of compost materials laid out in a windrow that is 10 feet wide and 44 feet long ($4 \times X + 4$) for each layout of 10 animals. (X is the number of cows.) (see diagrams in BMP) A 2 feet space will be allowed between the end cows and the end of the windrow.

Windrows will be laid out in pairs, with a one foot gap between each pair. A gap of 10 feet will be allowed before the next pair of windrows. (see diagrams in BMP)

(Note: If burial is the primary option, then the description from the Department of Agriculture trench burial document should be used as guidance for this section.)

If a catastrophe occurred, _____ (Name and phone number) would immediately call:

Local: _____ (name and phone number)

State: _____ (name and phone number)

Federal authorities _____ (name and phone number)

on implementing biosecurity recommendations. We would immediately minimize traffic on the farm and disinfect people and vehicles coming to the farm and leaving the farm. (How would this be done? Is disinfection equipment for vehicles available on the farm? If not, where will it be obtained?)

_____ would be in charge of overseeing the composting/burial on our farm. S/he will have received this training from _____. For composting, s/he will oversee the bed building, the carcass layout, and the covering of the carcasses with at least 2 feet of material. (3 feet if it is winter) S/he will use a 3 foot probe to insure coverage is adequate. S/he will visually monitor the pile everyday for the first 7 days, and once a week thereafter. If cracks appear or any carcass part is visible, additional material will be added to cover immediately.

S/he will record Carcass Compost Temperatures 5 days per week, in at least five different places (flagged so that repeat measures are taken in the same spot) in each windrow until the time/temperature standard is met.(see attached) The temperatures will be recorded on a chart and that record will be kept in a safe place.

The pile will be left undisturbed for 10-12 weeks to as long as 6 months, based on levels of decomposition.

The windrow will be turned with a bucket loader, excavator, or compost turner about once a week thereafter for as long as the average pile temperature is above 110 degrees. In order for the compost to leave the farm, it must achieve a minimum of 131° F or 55° C for 3 days, or in the turned windrow phase, have achieved a minimum of 131° F or 55° C for a minimum of 15 days with a minimum of 5 turnings during that time. Otherwise it will be re-composted or spread on the owner's own fields.

There will be a record maintained of where each batch was spread, whether on own land or someone else's and it will be included in the Nutrient Management Plan of the landowner as well.

APPENDIX B BEST PRACTICAL TREATMENT FOR ANIMAL CARCASS INCINERATORS

The following language was taken from a model DEP license for a veterinary incinerator used to dispose of animal carcasses:

1. Best Practical Treatment (“BPT”) for existing equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

This source was previously subject to Best Available Control Technology (BACT) requirements. *The former BACT determination is now considered Best Practical Treatment for this source.* BPT for the Class IV-A veterinary incinerator includes the following:

Operating temperature in the secondary chamber or refractory lined stack shall be maintained at or above 1600°F with a stack gas retention time, at or above 1600°F, of at least 0.5 second.

To ensure an efficient burn and to prevent odors and visible emissions, the secondary chamber shall be preheated, as specified by the manufacturer, until the pyrometer temperature measures a minimum of 1200°F prior to commencing the burn cycle (*check with the manufacturer to see that this will still ensure compliance, there is usually test data available or a VE can be done at the source; if not then leave at 1600*).

Once the burn cycle has commenced by introduction of primary chamber combustion, the incinerator shall be operated in an efficient manner and as specified by the manufacturer for the period of time between preheat and reaching the set operational temperature to be a minimum of 1600°F in the secondary chamber.

The temperature in the secondary chamber or refractory lined stack shall be maintained at or above 1600°F for the duration of the burn cycle.

A pyrometer and ¼ inch test port shall be installed and maintained at the location of the incinerator or refractory lined stack, which provides sufficient volume to insure a flue gas retention time of not less than 0.5 seconds at the minimum of 1600°F.

A log will be maintained recording the weight of the waste charged, preheat time, charging time and the temperature of the secondary chamber every 60 minutes after start-

up until, and including, final shutdown time. For facilities operating a chart recorder, the start time, date, and weight charged may be logged on the chart.

A maximum particulate emission rate of 0.20 gr/dscf corrected to 12% CO₂ will be met. Emissions information is based on a licensed allowed particulate matter emission limit of 0.20 gr/dscf corrected to 12% CO₂, the burning of propane fuel as an auxiliary fuel, and the use of AP-42 factors: Tables 2.3-1 and 2.3-2 for biomedical waste incineration (dated 7/93) and Table 1.5-1 for liquid propane fuel (dated 07/08):

PM - 0.20 gr/dscf corrected to 12% CO₂, based on BACT, and 0.20 lb/10³ gallons fuel factor.

SO₂ – 0.16 lb/hr based on the AP-42 factors of 2.17 lb/ton and 0.00 lb/10³ gallons fuel factor.

NO_x – 0.47 lb/hr based on the AP-42 factors of 3.56 lb/ton and 0.207 lb/10³ gallons fuel factor.

CO – 0.34 lb/hr based on the AP-42 factor of 2.95 lb/ton and 7.50 lb/10³ gallons fuel factor.

VOC – 0.04 lb/hr based on the AP-42 factor of 0.299 lb/ton and 1.0 lb/10³ gallons fuel factor.

Visible emissions from the incinerator shall not exceed 10% opacity based on a six (6) minute block average basis.

The ash must be disposed of in accordance with the requirements of the Bureau of Remediation and Waste Management.

The incinerator operator(s) shall receive adequate training to operate the incinerator in accordance with the manufacturer's specifications and shall be familiar with the terms of the Air Emission License.

2. BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Technology (BACT) as defined in 06-096 CMR 100. BACT is a top down approach to selecting air emission controls considering economic, environmental and energy impacts. BACT for the Class IV-A (veterinary) incinerator includes the following:

Operating temperature in the secondary chamber or refractory lined stack shall be maintained at or above 1600⁰F with a stack gas retention time, at or above 1600⁰F, of at least 1.0 second.

To ensure an efficient burn, and to prevent odors and visible emissions, the secondary chamber shall be preheated, as specified by the manufacturer, until the pyrometer measures a minimum of 1200⁰F prior to commencing the burn cycle (*check with the manufacturer to see that this will still ensure compliance, there is usually test data available or a VE can be done at the source; if not then leave at 1600*).

Once the burn cycle has commenced by introduction of primary chamber combustion, the incinerator shall be operated in an efficient manner, and as specified by the manufacturer, for the period of time between preheat and reaching the set operational temperature to be a minimum of 1600⁰F in the secondary chamber.

The temperature in the secondary chamber or refractory lined stack shall be maintained at or above 1600⁰F for the duration of the burn cycle.

A pyrometer and ¼ inch test port shall be installed and maintained at the location of the incinerator or refractory lined stack, which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1600⁰F.

A log will be maintained recording the weight of the waste charged, preheat time, charging time and the temperature of the secondary chamber every 60 minutes after start-up until, and including, final shutdown time. For facilities operating a chart recorder, the start time, date, and weight of waste charged may be logged on the chart.

A maximum particulate emission rate of 0.20 gr/dscf corrected to 12% CO₂ will be met. Emissions information is based on a licensed allowed particulate matter emission limit of 0.20 gr/dscf corrected to 12% CO₂, the burning of propane fuel as an auxiliary fuel, and the use of AP-42 factors: Tables 2.3-1 and 2.3-2 for biomedical waste incineration (dated 7/93) and Table 1.5-1 for liquid propane fuel (dated 07/08):

PM - 0.20 gr/dscf corrected to 12% CO₂, based on BACT, and 0.20 lb/10³ gallons fuel factor.

SO₂ – 0.16 lb/hr based on the AP-42 factors of 2.17 lb/ton and 0.00 lb/10³ gallons fuel factor.

NO_x – 0.47 lb/hr based on the AP-42 factors of 3.56 lb/ton and 0.207 lb/10³ gallons fuel factor.

CO – 0.34 lb/hr based on the AP-42 factor of 2.95 lb/ton and 7.50 lb/10³ gallons fuel factor.

VOC – 0.04 lb/hr based on the AP-42 factor of 0.299 lb/ton and 1.0 lb/10³ gallons fuel factor.

Visible emissions from the incinerator shall not exceed 10% opacity based on a six (6) minute block average basis.

The ash will be disposed of in accordance with the requirements of the Bureau of Remediation and Waste Management.

The incinerator operator(s) shall receive adequate training to operate the incinerator in accordance with the manufacturer's specifications and shall be familiar with the terms of the Air Emission License.

APPENDIX C
MAINE DEPARTMENT OF AGRICULTURE
FOOD AND RURAL RESOURCES

CATASTROPHIC ANIMAL CARCASS DISPOSAL
SITE SELECTION PROTOCOL
January 12, 2010

For routine disposal of animal carcasses, site selection is driven primarily by environmental concerns though a number of other factors also come into play such as convenience to the farmer, accessibility during all times of year, option of preference for disposal, aesthetics, interference with farming operations, disease control and site conditions on the farm. Farmers have plenty of time to develop and use a site that meets or can be modified to meet a standard set of conditions. And, the site will be used on a continuing basis for an indefinite time period. In the case of a catastrophe however, the primary driving factor for site selection may be different, depending on the nature of the catastrophe. If the catastrophe is caused by a highly contagious disease such as foot and mouth disease, containing and controlling the disease is of paramount importance. To contain a highly contagious disease, it is necessary to minimize transport distance and time so the diseased animals can be disposed of quickly, effectively and efficiently. There will be no need to worry about interfering with farming operations since the farmer will be out of operation until the farm has been sterilized.

The most viable option for disposing of animals with a highly contagious disease is in most cases by composting them*. Burial is very rarely a viable option in Maine. In order to contain and eliminate the threat of disease spreading, the animals would have to be buried so deep that they would be placed within the groundwater table in almost all of the soils found in Maine. The only cases where disposal of animal carcasses by burial may be a viable option is if the animals die as a result of a fire or other such natural disaster. Disposing of diseased animal carcasses by composting can be done in silage bunkers, manure storage areas, heavy use areas, in open barns or holding areas and even in driveways or parking areas. These are all impermeable areas that need no site preparation and can be easily accessed any time of year, both by the farmer and by others bringing materials (such as hot biosolids compost) for the disposal operation. This does not mean that the other concerns can be ignored; it is just that they are secondary to the primary goal of controlling and containing the spread of disease. Environmental concerns for the one-time use of a composting site are not nearly as great as with burial or a compost site that will be used on a continuing basis. If done properly, the compost (especially if it is hot to start with) will absorb leachate from decomposing carcasses providing protection of the seasonal groundwater table and neighboring streams, wetlands, lakes or ponds. They can therefore, be used in sites with greater limitations than if burial is the option to be used or for routine carcass disposal.

*An exception to this would be a disease such as anthrax which has been shown to be resistant to composting.

Steps to consider when selecting a site for disposal of animal carcasses as the result of a catastrophe (including highly contagious disease):

1. The site(s) should be as near to the barn housing the animals as possible/practical. A single farm may need more than one site if animals are housed in different locations (such as milking cows in one area and replacement cows in another that is a distance away). The site(s) must be large enough to accommodate the composting of all of the animals in a barn by the windrow method (maximum of 15 feet wide) with large animals (cows or horses) being piled only one carcass high. This minimizes leachate production from the composting process lessening the need for concern with environmental issues.
2. Look at environmental issues such as setbacks from waterbodies, depth to groundwater and/or bedrock, wells, property lines, roads, and buildings. Maximize setbacks from sensitive features while meeting the primary site location objective of being easily and quickly accessible to the carcasses. Keep in mind that these sites will likely only be used once and composting (done properly and in accordance to MDOA composting guidelines) does not generate much leachate. You can also select a site or sites that would not be considered for routine disposal such as heavy use areas, empty silage bunkers, empty manure storages, parking areas, driveways or farm roads.
3. Consider site conditions. Pick areas that have the best potential for a successful composting operation. Sites with a slight slope work best and they should have moderately well to well drained soils that are moderately deep or greater to bedrock. It is preferable however to select a site with soil and/or slope limitations near the barns that can be easily modified than to select a site with better site conditions but which is a distance away from the barns.
4. Aesthetics should also be considered but only after considering all of the other issues listed in 1-3 above. The animals will only be composting for a few months and after which the compost will become a good soil amendment that can be spread on the farmers fields.
5. Alternate sites may be located in the event of a catastrophic event that does not result in the shutting down of all farming operations. This could include a fire that destroys one building but not all that house animals or contaminated feed that kills a number of animals but does not create a biosecurity threat. It could also include the suffocation of a flock of chickens in a house but does not harm the building.

